COMPARATIVE STUDY OF MOTOR ABILITIES AND NORMS ON BASKETBALL PLAYERS OF SOUTHERN SAI CENTERS.

Research Proposal Submitted for the Approval of Registration for

DOCTOR OF PHILOSOPHY

IN

PHYSICAL EDUCATION

Submitted By

Research Scholar

Mrs. DEEPA. S

Research Guide

DR. HANUMANTHAYYA PUJARI.

Assistant Professor

THE RESEARCH PROPOSAL SUBMITTED TO

DEPARTMENT OF PHYSICAL EDUCATION AND SPORTS SCIENCES

KARNATAKA STATE AKKKAMAHADEVI WOMEN'S UNIVERSITY
VIJAYAPURA – 586108

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CHAPTER -I

INTRODUCTION

The world of games and sports has crossed many milestones, as a result of different achievements in general and their application in the field of sports in particular. Scientific investigation into performance of sportsman has been playing an increasingly importance role to attain excellence of performance in different sports.

Sports and games are a popular pastime for the young and the old, boys and girls, and for men and women, which offer an opportunity to do exercises and obtain relaxation. They can play an important part in developing physical fitness and skills for use in leisure time at present and, more importantly, in later years. Many of the skills developed through games and sports may be used in the years to come to help to keep them physically fit.

Now the sports-man have been able to give outstanding performance because of involvement of new scientifically substantiated training methods and means of execution of sports exercise such as sports techniques and tactics, improvement of sports grass, and equipment, as well as other components and condition of the system of sports training

Physical Education seems to have taken a new turn in the form of sports sciences. The sport sciences in turn have taken their substance and methodology from various basic sciences. For many years the research in sports was being. Undertaken within these basic sciences but with the advancement of knowledge the speculations have evolved a respectable position.

As a matter of fact, research nowadays embraces knowledge from various disciplines of sports sciences. In India too in the recent years some research work has been going on in the basic discipline, pertaining to sports. Physical Education and sports, being an integral part of education have also experienced the impact of scientific advancements.

Now the sportsman have been able to give outstanding performances because of involvement of new scientifically substantiated training methods, and means of execution of sports exercises, such as sports techniques and tactics, improvement of sportswear and equipment's as well as other components and conditions of the system of training.!

Basketball is one of today's fastest team sports and is epitomized by grandiose manures such as slam dunk and blocked shot. These showcases of athletic ability clearly demonstrate the nature of the sports, in that speed, strength and power are all major determinants of successful

basketball performances (Nick stane.2007). Although such characteristics are commonly associated with modem basketball athletes, it is interesting to consider basketball evolution from its humble beginning into one of the most popular and dynamic team sport of modem society. Basketball has gained worldwide popularity and fascinated players and spectators with its dynamic characteristics as a team sport.

HISTORY AND DEVELOPMENT OF BASKETBALL GAME

Lacking a safe activity to occupy his young athletes during the long cold Springfield, MA. Winter of 1891, YMCA International Training School physical Education teacher James Naismith got creative. He nailed peach baskets to the lower rung of his gymnasium's balcony, dug up an 'association football' (known today as a soccer ball), and soon hatched the rules for what would later become a game with close to a billion devotees: Basketball.

However, James Naismith's creation would look foreign today's rapid fans. First, to lower the risk of injury, players were not allowed to run without dribbling the ball. Thus, the original game was more a kin to modern day ultimate Frisbee (where receivers of a pass must remain in place) than to the high flying, fast-paced spectacle that is modern Basketball. Additionally, the first game of basketball, played on December 21, 1891, was a nine- to-a-side slow-paced affair with a final score of 1-0. The sole basket came on William Chase's 25-foot heave that managed to come to rest in the bottom of the peach basket.

In this game and in early subsequent games, when a basket was scored, a custodian with a ladder had to remove the ball from the solid bottomed peach basket. In the following years, an unaltered peach basket would be replaced with a peach basket with holes in the bottom (in which the ball would be popped out with a long rod), an unwrapped net, a net contraption that opened with a lever (similar to a modern-day toilet), and finally with empty-bottomed nets.

Despite the seemingly alien differences between Naismith's invention and contemporary Basketball, there were some striking similarities. As indicated in Naismith's original 13 rules, "No shouldering, Holding, Pushing, Tripping, or Striking in any way the person of an opponent shall be allowed," which is basically the policy regarding fouls in modern Basketball. Also, "If there was evident intent to injure the person [during a foul], [the offending player would be removed] for the whole of the game," which is comparable to the modern NBA's Flagrant-2

policy. There were even the 5 Second violations on inbound passes, which served then, as it does now, to quicken the game's pace of play.

Soon after the first privately held game at the YMCA, members of the Springfield community began to come out and watch the regularly held matches played in the YMCA gymnasium. Basketball then began to spread like wildfire, jumping from YMCA to YMCA, from Town to Town, from College to College and from State to State, where many of the original members of the YMCA International Training School brought it when returning home on their school breaks. In 1893, less than two years after the sport was invented, Mel Ride out organized the first match on foreign soil in France, and in the following decades the U.S. military was instrumental in spreading the game as it roamed the globe.

While the first intercollegiate basketball match occurred between Hamline University and Minnesota State on February 9, 1895, it is not officially recognized as such because it still utilized Naismith's original nine-to- a-side guidelines. The first college basketball game that did incorporate the modern five-to-a-side limitations took place between the University of Iowa and the University of Chicago on January 18, 1896, when Chicago squeaked by Iowa 15-12.

Soon after, in 1898, the first professional basketball league was formed. The National Basketball League, characterized by six teams from the Northeast (New York Wanderers, Trenton Nationals, Millville Glass Blowers, Bristol Pile Drivers, Camden Skitters, and Pennsylvania Bicycle Club) was an early precursor to the American Basketball League (founded 1925), the Basketball Association of America (founded 1946), and the largest and longest-lasting of them all, the National Basketball Association (founded 1946).

While it folded after six truncated seasons, the NBL, along with colleges, YMCA, and the organic spread of the game, helped to raise the national profile of basketball. As a fun side note, the original copy of Dr. James Naismith's 13 Rules sold for $4.3 million in 2010. The Naismith Memorial Basketball Hall of Fame, opened in 1959, is located in the game's original birthplace of Springfield, Massachusetts.

THE PRESENT DAY SCENARIO

The game gained popularity and spread all over the country. The pleasure and thrill that the game provides have attracted the people of all classes to play Basketball or witness the game in most part of the world. The Basketball game has got various fundamental skills. For all sort of activity.

Motor Fitness is very essential. It is related to the ability to meet the demands of the environment specifically to preserve, to with stand stress, to resist fatigue and to possess the energy for an abundant life. Motor Fitness is an aspect of total fitness. Total fitness is viewed as the capacity to function in every way at one's best.

The popularity of Basketball has increased over the passing years, from being a popular game in India to a sport recognized at the national and International level. A number of championships, both at the national and international level, have been organized for Basketball, wherein the Indian national Basketball team has delivered remarkable performances.

The introduction of Federation Cup Basketball matches in India in 1981 is a milestone in the history of Basketball in India. India touched another milestone in 2004, when India hosted the first ever Basketball World Cup, in Mumbai. The country won the World Cup, as well. India has produced a number of talented Basketball players, so far, who have earned international recognition and brought laurels to the country.

MOTOR ABILITIES

At the end of 1891, Canadian physician and physical Education professor James Naismith adapted several sport branches and formed a single unit wrote simple rules and created a new sport: Basketball. Throughout its history, it has become a globally popular sport that engages many people regardless of age, gender, race, or continent in which they live.

However, as a professional sport, basketball is characterized by the complexity and high tempo of the game, as well as the dynamism, variability, and a typicality of the game

characterized by rapid continuous reactions in all stages of the match. Such a complex activity can be realized only with the involvement of several factors.

The set of factors on which the success of basketball depends are morphological characteristics, motor abilities, functional abilities and psychological characteristics. Numerous studies show that motor abilities are crucial for achieving sport results.

Motor abilities are those competences that contribute to solving motor assignments and condition successful movement, regardless of whether they have been acquired by training or not. Analysis of the basketball game determined the structure of the most crucial motor abilities for basketball: speed, strength, precision, balance, flexibility and coordination.

One of the most essential segments of the basketball game is the fast-paced abilities of basketball players, which include rebound and agility. They allow basketball players efficient movement during the game and, in the equation of the specification, their contribution is as much as 30%.

A factor that largely determines success in basketball is explosive power, manifested in jumps, initial acceleration and rapid changes in direction, deceleration and passing. Stamina is an essential ability that enables the generation of energy necessary for all kinds of muscular activities, i.e., is the basis of the so-called energy-motor preparation of basketball players. High aerobic ability ensures slower fatigue and faster recovery in short pauses during the game, while anaerobic ability is responsible for durability in repetitive high-intensity activities.

NORMS

Johnson and nelson state that "Norms are values considered to be representative of a specified population. A test that has accompanying norms is definitely preferred to one that does not. Norms are usually based on age; grade, height, weight, or various combinations of these characteristics.

"A norm as the term is used in relation to test scores is the average or typical test score (or other measure) for members of a specific group. Norms are often presented in tables giving the typical score values for a series of different homogenous groups

STATEMENT OF THE PROBLEM

A sport has been recorded as part and parcel of fitness it plays significant role in developing in varies motor abilities and parameters among the participant. The performance of the Basketball Players depends on motor abilities and motor skills factors.

The main purpose of this study is to do the **"Comparative study of Motor Abilities and Norms on Basketball Players of Southern SAI Centers".**

OBJECTIVES OF THE STUDY:

- To find out the Motor abilities on Basketball Players of Southern SAI Centers.
- To study the influence of Motor Abilities and Motor Skills on Basketball Players of Southern SAI Centers.
- To find out the relationship of Motor Abilities and Motor Skills variables with the playing ability on Basketball players of Southern SAI Centers.
- To find out the combined contribution of Motor Abilities and Motor skills variables with playing ability on Basketball players of Southern SAI Centers.
- To find out the most versatile Norms of Motor skills which could evaluate the playing ability on Basketball players of Southern SAI Centers.
- To assess the Motor Abilities and Norms between different Southern State Basketball Players of Southern SAI Centers.
- To find out the Motor Abilities and Motor Skills on Male Basketball Players of Southern SAI Centers.
- To find out the Motor Abilities and Motor Skills on Female Basketball Players of Southern SAI Centers.

HYPOTHESIS:

- There will be a significant relationship between Motor Abilities variables with the playing ability on male basketball Players of Southern SAI Centers.
- There will be a significant relationship between Motor Abilities variables with the playing ability on Female basketball Players of Southern SAI Centers.

- There will be a significant relationship between Motor Skills variables with the playing ability on male basketball Players of Southern SAI Centers.
- There will be a significant relationship between Motor Skills variables with the playing ability on Female basketball Players of Southern SAI Centers.
- There will be a significant difference to compare the Motor Abilities in different on Male Basketball Players of Southern SAI Centers.
- There will be a significant difference to compare the Motor Abilities in different on Female Basketball Players of Southern SAI Centers.
- There will be a significant difference to compare the Norms on Motor Skills in different on Male Basketball Players of Southern SAI Centers.
- There will be a significant difference to compare the Norms on Motor Skills in different on Female Basketball Players of Southern SAI Centers.

DELIMITATION:

- The study is delimited to only 160 Male Subjects.
- The study is delimited to only 160 Female Subjects.
- The study is delimited to Men and Women Basketball Players of Southern SAI Centers.
- This study will be confined to the age group of 18 to 25 years.
- The study is delimited to Inter – Collegiate, Inter University, National and International level participated players Under Southern SAI Centers only.
- The study is delimited to 20 - Male and 20 - Female Subjects from each Southern SAI Centers.
- The study is delimited Basketball game only.
- The study is delimited to Southern States of India only.
- The study is delimited to Karnataka, Andhra Pradesh, Kerala and Tamil Nadu States only.
- The study is delimited to selected Motor Abilities variables like Speed, Strength, Agility, and Flexibility.
- The study is delimited to selected Skills related Motor Abilities variables like Muscular Strength, Aerobic Power, Anaerobic Capacity and Flexibility.

LIMITATION:

- The subjects who were subjected to investigation belonged to different region and they were having different living conditions, diets, rest and working conditions, which might serve as a limitation of the study.
- Lack of motivation techniques was also one of the limitations in pursuing the research work.
- Food habits, motivational factors, fitness levels of the subjects were not taken into consideration.
- The geographical region to which the subjects belonged may have an effect on the result of the study, which could not be controlled.
- The subjects had engaged themselves in different types of physical activity and the effect of these activities on their playing ability was not controlled.

SIGNIFICANCE OF THE STUDY:

The significance of the study was as follows;

- This study would be useful for the basketball players to combine Aerobic Anaerobic and Strength Training to improve the Basketball skill performance as well as Motor Abilities related parameters.
- The study would add to the quantum of knowledge in the area of training in developing Skills.
- The study would be in choosing what type of Specific skill training can be taken to the coaching aspects.
- The study will be useful for Physical Education Teachers, Physical Education Directors, Coaches or Trainer to know Motor Abilities status through Norms levels.
- The study will be useful for teachers and students to find out their Skill Improvements through Norms in specific Basketball Skills.
- This study would help to create awareness of Motor Fitness and Skill Fitness.

DEFINITION AND EXPLANATION OF TERMS

Comparative studies are investigations to analyze and evaluate, with quantitative and qualitative methods, a phenomenon and / or facts among different areas, subjects, and / or objects to detect similarities and / or differences.

Motor ability Quick Reference a genetically defined personal characteristic or trait, such as manual dexterity and reaction time which contributes to proficiency in a number of motor skills. Motor abilities cannot be easily modified by practice or experience (compare motor skill).

Motor fitness is a term that describes an athlete's ability to perform effectively during sports or other physical activity. An athlete's motor fitness is a combination of five different components, each of which is essential for high levels of performance. Improving fitness involves a training regimen in all five.

There are many different manifestations of fitness. Some examples include strength, stamina, speed, and flexibility. Certain types of fitness, such as an athlete's cardiac fitness level, are more important than others. An athlete needs to be aware of the various types of fitness to develop an effective training program that focuses on weak or important areas.

Motor fitness, or Motor Physical Fitness, refers to how an athlete can perform at his or her sport, and involves a mixture of agility, coordination, balance, power, and reaction time. Improving this form of fitness is an indirect result of training in any of these attributes. All five components of fitness are essential for competing at high levels, which is why the concept is seen as an essential part of any athlete's training regime.

Agility refers to the body's ability to perform quick movements in different directions. It is sometimes described as how fast an athlete is able to change direction while competing on the field or on the court. Improving agility often involves sprinting between cones that are placed at a variety of angles.

Coordination is more difficult to describe than agility because it cannot be observed directly. An athlete with a high level of coordination is able to combine all forms of fitness not just those that are part of motor fitness in an effective and controlled way. The more coordinated an athlete is, the more efficient he or she will be during competitive activities.

Power refers to the athlete's ability to contract his or her muscles forcefully in an explosive movement. Most people have an intuitive sense of what power is, and why it's important for sports. Powerful athletes are not merely strong; they are able to use that strength quickly and efficiently.

Balance and Reaction Time are two other important parts of motor fitness. Balance is an athlete's ability to control his or her body's movements, while reaction time is how quickly the athlete can respond to a changing situation. Improving all five components of motor fitness is important for any athlete who wants to achieve his or her best.

Ability is the make-up of an athlete that we inherit from our parents. Abilities underpin and contribute to skills. Abilities can be essentially perceptual, essentially motor or a combination of both. Most abilities to do with action are a combination and are referred to as psychomotor abilities. Now there is no definitive list of psychomotor abilities.

NORMS – 1. An authoritative standard

2. A principle of right action binding upon the members of a group and serving to guide, control, or regulate proper and acceptable behavior.

Basketball is a team sport in which two teams, most commonly of five players each, opposing one another on a rectangular court, compete with the primary objective of shooting a basketball (approximately 9.4 inches (24 cm) in diameter) through the defender's hoop (a basket 18 inches (46 cm) in diameter mounted 10 feet (3.048 m) high to a backboard at each end of the court) while preventing the opposing team from shooting through their own hoop. A field goal is worth two points, unless made from behind the three-point line, when it is worth three. After a foul, timed play stops and the player fouled or designated to shoot a technical foul is given one, two or three one-point free throws. The team with the most points at the end of the game wins, but if regulation play expires with the score tied, an additional period of play (overtime) is mandated.

Sports Authority of India (SAI) is the apex national sports body of India, established in 1982 by the Ministry of Youth Affairs and Sports of Government of India for the development of sports in India.

CHAPTER-II

REVIEW OF RELATED LITERATURE

Sincere efforts have been made by the researcher scholar to locate literature studies found from various sources which the research scholar has come across, are cited below.

Hopkins (2011) investigated the factor structure of human motor performance in the sport skill domain of basketball and to identify the robust factors in that domain procedure: After a review of literature, a theoretical model of hypothesized dimension of basketball ability was developed. The hypothesized factors were: (i) Shooting, (ii) Passing, (iii) Jumping, (iv) Movement without the ball, and (v) Movement with the ball. Twenty one experimental variables were selected to sample these hypothesized factors.

Included in the twenty one variables were the nine items from the American association for health, physical education and recreation, basketball for boys, skill test manual. The variables were administered to seventy boys ranging from grades 7 through 12 enrolled in the University of Minnesota Duluth Basketball Camp during the summer.

The hypothesized model was then investigated by the use of the following factor analytic models: 1) alpha factor analysis, 2) canonical factor analysis, 3) image analysis, and 4) principal components analysis. Both oblique and orthogonal rotations were performed with each of the factor analytic models.

The following findings were based on the analysis of the data collected to examine the basketball skill domain: 1) the hypothesized dimensions of movement without the ball and movement with the ball were found to consolidate into one dimension. The best measures of this factor were; zig-zag run and the zig-zag dribble. 2) Hypothesized dimension of passing was identified and found to be best measured by the said shoot, front shot and the foul shot. Since the distance of side shot (20 feet) was observed to be quite difficult for the seventh and eight graders, the front shot is recommended as the best measure of the shooting dimension.

William (2008) attempted to develop a basketball potential skill test and examined its validity, reliability and objectivity. A pilot study was conducted with two groups of students at Baldwin-Walh College as the preparation of an evaluative instrument. A subjective analysis of the game and a review of pertinent literature resulted in the identification of three player's success factor areas: anaerobic power, band-eye co-ordination and agility.

Seven tests of these areas were administered during 1971-72 to 44 basketball oriented students who had divided themselves into sub-groups of 25 candidates and 19 non-candidates by individual decisions regarding Inter-collegiate basketball candidates. Biserial correlation was

utilized to determine validity co-efficient for each test, with the most valid in each test, with the most valid in each area comprising the final battery.

Those retained were jump and reach, anaerobic power, 30 second under basketball shot, hand-eye coordination, and 4-way boomerang and agility. Total battery scores were calculated through Hull Scale conversion and were used to compute a validity Co-efficient of 0.915.

Objectivity and reliability were explored by product-Moment correlation techniques in the final pilot Phase, performed with 44 men enrolled in required physical education classes in the fall quarter. Pairs of testers individually recorded results for each event to provide data yielding objectivity co-efficient of 0.994 for battery totals. A reliability coefficient of 0.896 for test battery was calculated after 38 subjects were tested two weeks later.

Weighted conference biserial coefficients of validity were computed for two dichotomies created by coach's decisions. An analysis of sub groups of 99 varsity and 151 non-varsity players, yielded a coefficient of 0.628. The selection of 94 tournament and 156 non-tournament players, produced data which exhibited a validity coefficient of 0.684.

An attempt was made to predict team success through an exploration of the means of the weighted total scores of the starting line-ups. The top of trends in final conference standings were investigated by means of the spearman rank difference method of correlation. A coefficient of validity of 0.875 was calculated.

Harrison(2013) developed a four-item basketball test for boys in grades seven through ten. The four items are field goal shooting, speed pass, dribble, and rebounding. The subjects were one hundred boys in each of the grades. Test-retest correlations for the separate tests ranged from 0.72 to 0.96; for the total battery, the co-efficiency clustered between 0.91 and 0.96.

The validity of the test was established as correlations between scores on the test and three criterion measures as correlation between scores on the test and three criterion measures follows: 0.82 with the Johnson Basketball Test; 0.86 with peer ratings of basketball playing ability; and 0.77 with expert jury ratings. A correlation of 0.89 was reported between the test and the average of the three basketball criterion measures.

Clarke and Clarke (2008) pointed out in their book that AAHPERD basketball test based on the judgments of experts in the sport, four skills were identified as essential for the basketball playing ability of both boys and girls at all ages ten through seventeen years and in college. The four skills were: speed spot shooting, accuracy speed passing, control dribble, and defensive movement. Twelve test items were devised to evaluate the four essential skills.

A pilot study of the twelve experimental items was conducted at each school level, elementary through college, for two purposes: (a) to determine the administrative feasibility of the test items; and (b) to provide estimates of their reliability and validity. From a preliminary

selection of six, four test items-one for each of the essential basketball skills-were finally selected.

With few exceptions, the intraclass reliability of the four items for each sex and at each school level were 0.90 and above. For validity estimates, multiple correlations were determined between subjective ratings of basketball playing ability as the criterion and the various skill tests. The investigators suggested that the lower coefficients obtained may be due to poor agreements among ratters of basketball playing abilities.

The manual contains instructions for the administration of the four basketball skill test items. Percentile norms are also included for each sex separately and at each age ten through sixteen to seventeen years and in college. T-scores are also provided so that testers can combine the results of all tests in order to obtain a battery score.

Norming data were collected from 10,000 students representing thirty-five states. From the standpoint of administrative feasibility, it was indicated that the four-item test battery could be administered in two periods to an "average-sized" class. This basketball skill test battery of four items replaced the earlier tests of nine items published in 1966 with separate manuals for boys and girls.

Miller (2011) study was to determine achievement levels in basketball skill based on the accomplishment of Women studies majoring in physical education in colleges. This study provided tables of norms in the form of T-Score and percentile rankings for new scores made by women physical education major's students on three basketball skill tests bounce and Shoot, half minute shoot and pas for accuracy. The skill tests were selected on the basis of results obtained by Leilich in an analysis of all existing basketball skill tests for women.

Ivan Zaric et.al., (2018) The intend of this investigation was to scrutinize the quantitative association among the finds of laboratory and field tests assessing functional, metabolic and motor abilities and the competition performances of youngster female basketball players. Investigate incorporated the U16 female basketball players of the top three basketball clubs of the Serbian first under-16 league (N=30), (14.98 ± 0.68 yrs).

The multifaceted representation system we applied included: laboratory and grassland testing and competition presentation analysis. The interaction between the decisive factor and the system of predictors were determined by applying the multiple deterioration analysis, which distinct the model of multiple relations and prediction.

The investigate results have shown that the predictor variables are statistically significant; describing the criterion with 84.4% probability, meaning that there is a high multidimensional correlation between the results of laboratory and grassland investigations and the competition performance index. The realistic submission of this study implies a arrangement of overprotective the effectiveness of the training progression in the preparation stage, the assortment and the creation of the model features of functional, metabolic and motor abilities of young basketball players.

Sushil Kumar et.al., (2017) the function of the study was to evaluate the relationship of physical fitness variables with playing ability of basketball players. The researcher undertook null hypothesis to investigate the relationship of physical fitness variables with basketball playing ability variables. Selective sampling device was used to select the subjects. 50 male subjects were selected for the present study, which played semi-final in CBSE cluster in UAE Basketball Championship from various schools.

Physical fitness variables were measured by administering AAHPERD youth fitness components measured Only the pull-ups, the sit-ups, the standing broad jump, the shuttle run, the 50 yard dash, the 1.5 mile run/walk and playing ability of basketball players were calculated by Johnson basketball skill test (field goal speed test, basketball throw for accuracy and basketball dribble test). For the rationale of analysis coefficient of correlation was taken between physical fitness variables and basketball playing ability variables and level of significance was established at 0.05

CHAPTER –III

METHODOLOGY

The present investigation is to do the **Comparative study of Motor Abilities and Norms of Basketball Players on Southern SAI Centers.**

This chapter discussed under following heading;

A. Selection of the subjects

B. Variables of the study

C. Collection of data

D. Tools and techniques

E. Statistical procedure

SELECTION OF SUBJECTS;

To achieve this purpose 20 Male and 20 Female subjects will be selected from Southern SAI Centers and their age group ranging between 18 to 25 Years.

SAMPLE DESIGN					
SPORTS AUTHORITY OF INDIA (SAI) CENTERS IN SOUTH INDIA					
STATE	**KARNATAKA**	**ANDHRA PRADESH**	**TAMIL NADU**	**KERALA**	**GRAND TOTAL**
1.	**Bengaluru** Men – 20 Women - 20	**Velluru** Men – 20 Women - 20	**Mayiladutturai** Men – 20 Women - 20	**Thrissur** Men – 20 Women - 20	160 (M&W)
2.	**Dharwad** Men – 20 Women - 20	**Vijayawada** Men – 20 Women - 20	**Chennai** Men – 20 Women - 20	**Thiruvanthapuram** Men – 20 Women - 20	160 (M&W)
TOTAL	**80**	**80**	**80**	**80**	**320 (M&W)**

VARIABLES OF THE STUDY

I.INDEPENDENT VARIABLES

A. Motor Abilities Variables

(i) Speed

(ii) Coordinative abilities

(iii) Explosive leg power

(iv) Shoulder strength

(v) Endurance

(vi) Flexibility

B. Motor Skills Variables

(i) Speed Spot Shooting

(ii) Layup Shooting

(iii) Control dribble

(iv) Defensive movements

(v) Passing

II. DEPENDENT VARIABLES.

Overall basketball playing ability,

TOOLS AND CRITERION MEASURES.

SL. No	VARIABLES	TOOLS/INSTRUMENTS	UNIT OF MEASUREMENTS
1	Hand Grip Strength	Hand Grip Dynamometer	In Kilograms
2	Explosive Power Of Arms	Two Hand Medicine Ball Put	In Meters
3	Explosive Power Of Legs	Five Leg Double Bounds	In Meters
4	Speed	30mts Dash Test	In Seconds
5	Agility	Semo Agility Test	In Seconds
6	Abdominal Muscular Endurance	Bent Knee Sit Ups	Number Of Repetition In 60 Sec
7	Flexibility	Sit And Reach Tests	In Centimeters

STATISTICAL TECHNIQUE:

The researcher will be used statistical analysis for the study, the mean, SD and T value procedures will be used for find out the significance.

Whenever, two-way factorial ANOVA with last factor repeated the obtained 'F' ratio interaction values are found to be significant, the simple effect test is used .when they obtained 'F' ratio value in the simple effect is found significant, the Scheffe's test is applied as post hoc test to determine which of the paired mean had significant difference .In all the cases the level of confidence is fixed at 0.05 to test the significance.

Signature of the Research Scholar

Smt.DEEPA.S

Signature of the Guide

Dr.Hanumanthayya Pujari

Recommendation of the Doctoral Committee Members:

1. Prof. D. M. Jyoti	Dean and Chairman of the DC
2. Dr. N. G. Kannur	External Member
3. Dr. Rajkumar P Malipatil	Chairman of the Dept
4. Prof. N. Chandrappa	Member
5. Dr. Sakpal Hoovanna	Member
6. Dr. K. P. Martin	Member
7. Dr. Srinivasa	Member
8. Dr. Jyoti A Upadhye	Member
9. Dr. Hanumanthayya Pujari	Member
10. Dr. Kiran G N	Member
11. Dr. U K Kulkarni	Convener

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